OIPE JC180
APR 26 2004
PATENT & TRADEMARK OFFICE

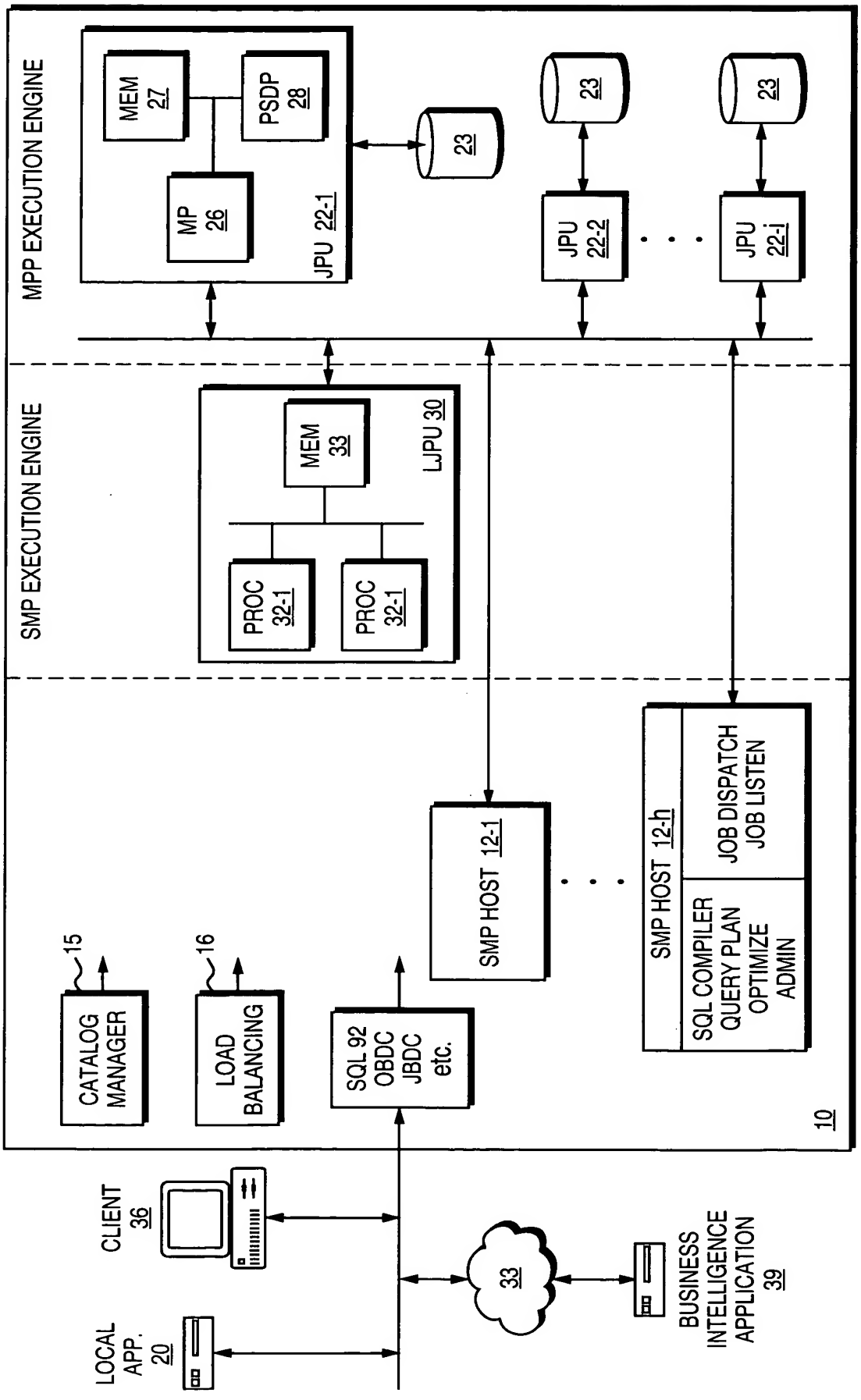


FIG. 1

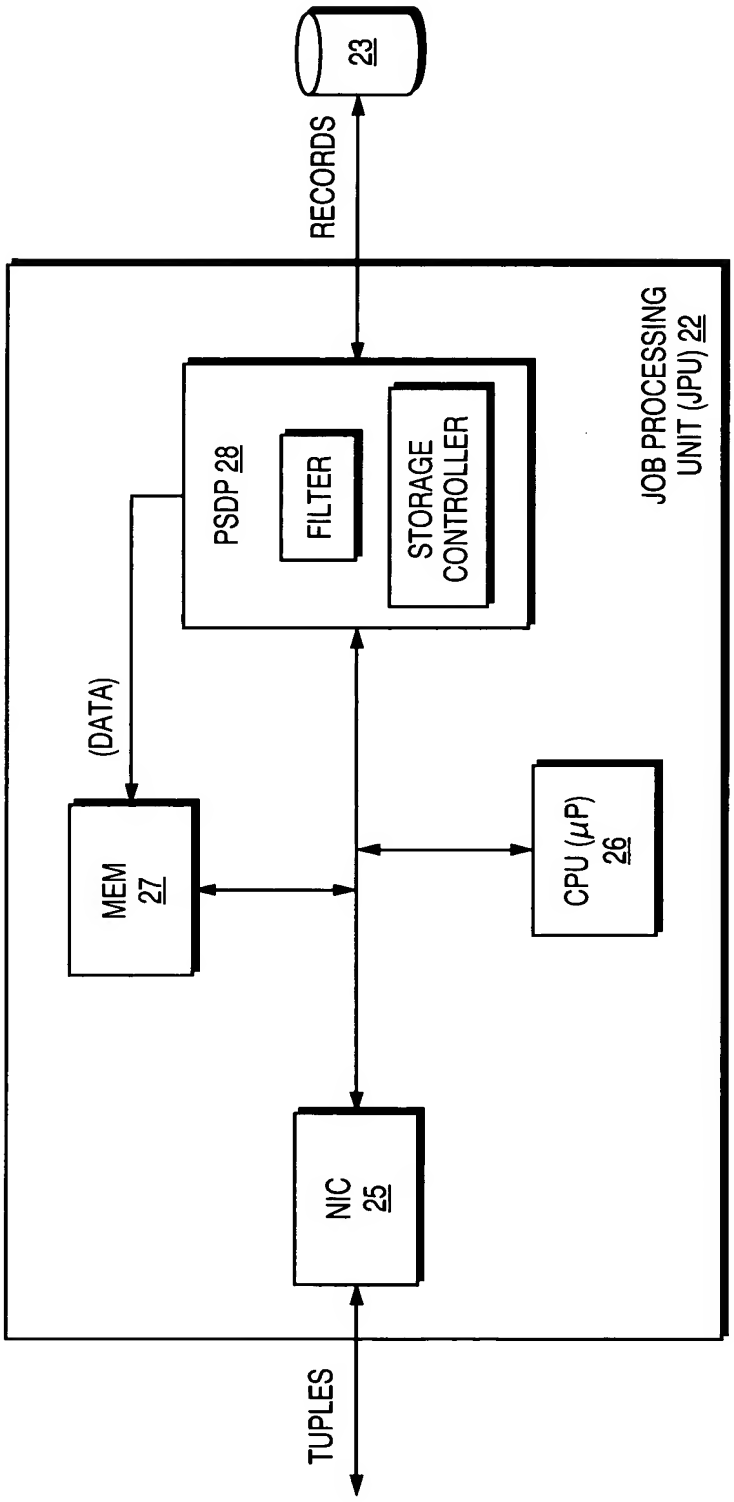

23
RECORDS
JOB PROCESSING UNIT (JPU) 22
PSDP 28
FILTER
STORAGE CONTROLLER
(DATA)
MEM 27
CPU (μP) 26
NIC 25
TUPLES

FIG. 2

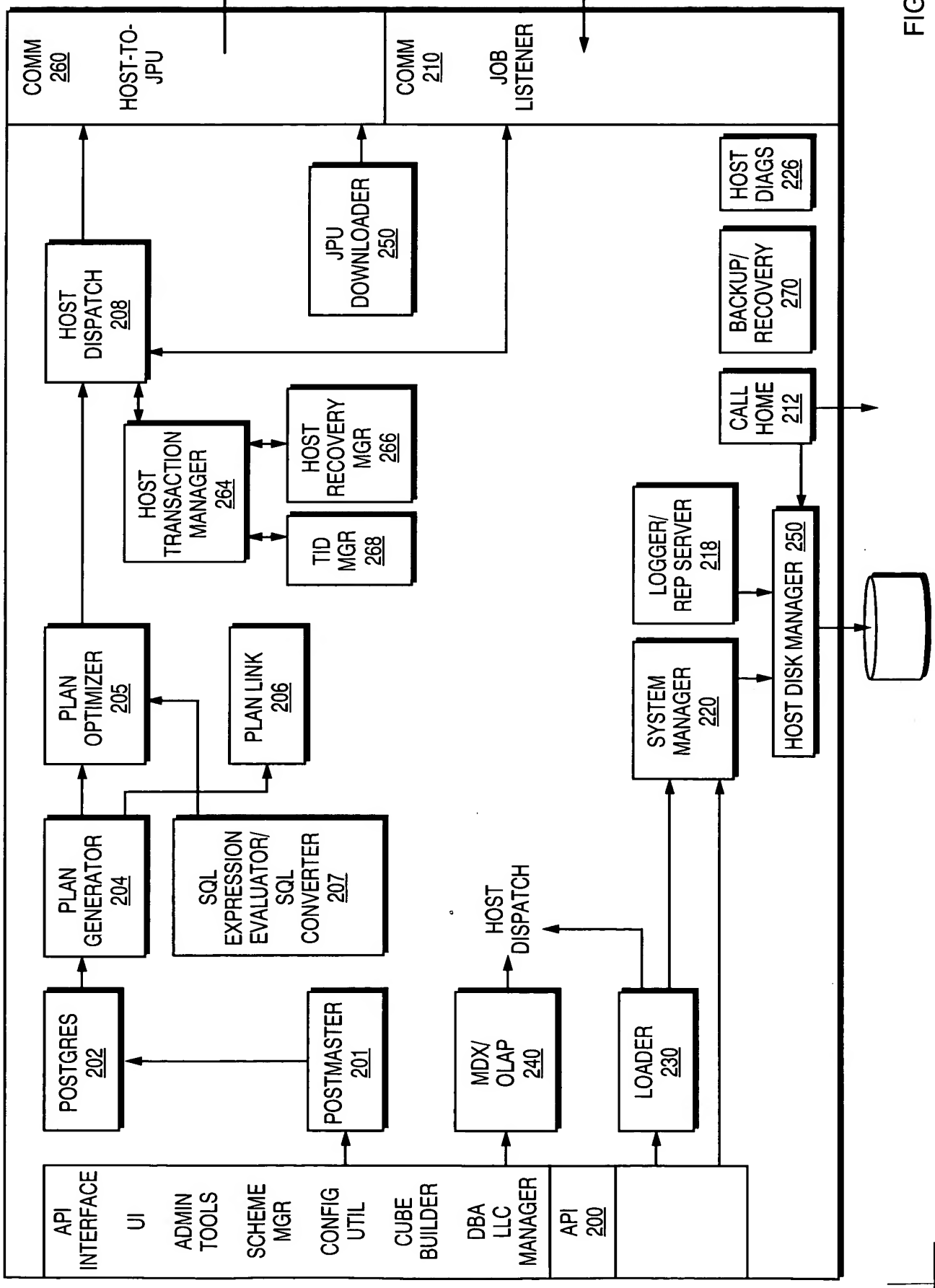

COMM 260
HOST-TO-JPU
COMM 210
JOB LISTENER
HOST DISPATCH 208
JPU DOWNLOADER 250
HOST DIAGS 226
BACKUP/ RECOVERY 270
CALL HOME 212
HOST TRANSACTION MANAGER 264
HOST RECOVERY MGR 266
TID MGR 268
LOGGER/ REP SERVER 218
HOST DISK MANAGER 250
PLAN OPTIMIZER 205
PLAN LINK 206
SYSTEM MANAGER 220
PLAN GENERATOR 204
SQL EXPRESSION EVALUATOR/ SQL CONVERTER 207
HOST DISPATCH
POSTGRES 202
POSTMASTER 201
MDX/ OLAP 240
LOADER 230
API INTERFACE
UI
ADMIN TOOLS
SCHEME MGR
CONFIG UTIL
CUBE BUILDER
DBA LLC MANAGER
API 200

FIG. 3

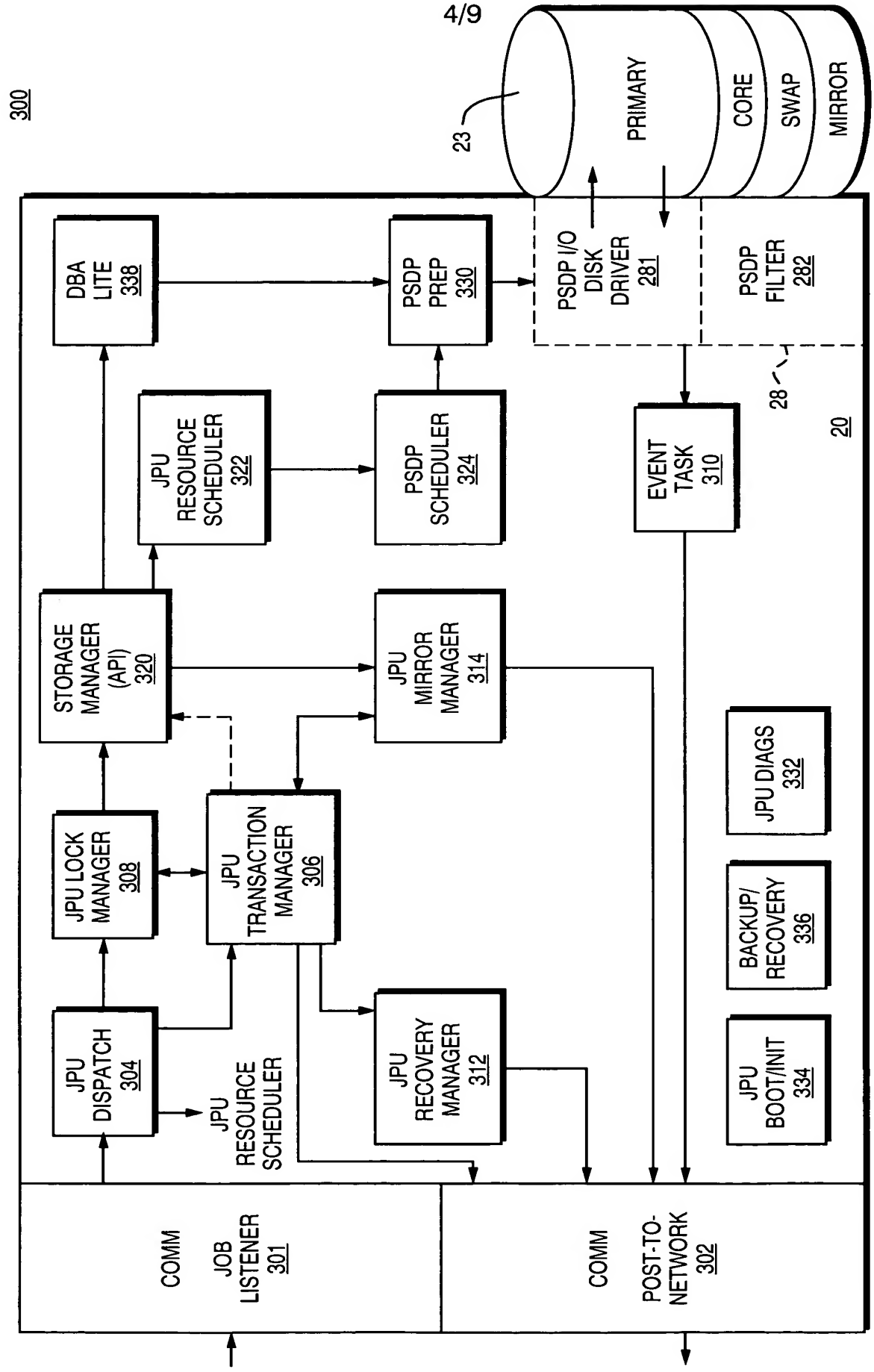

300
23
PRIMARY
CORE
SWAP
MIRROR
DBA LITE 338
PSDP PREP 330
PSDP I/O DISK DRIVER 281
PSDP FILTER 282
28
20
JPU RESOURCE SCHEDULER 322
PSDP SCHEDULER 324
EVENT TASK 310
STORAGE MANAGER (API) 320
JPU MIRROR MANAGER 314
JPU DIAGS 332
JPU LOCK MANAGER 308
JPU TRANSACTION MANAGER 306
BACKUP/ RECOVERY 336
JPU DISPATCH 304
JPU RESOURCE SCHEDULER
JPU RECOVERY MANAGER 312
JPU BOOT/INIT 334
COMM
JOB LISTENER 301
COMM
POST-TO-NETWORK 302

FIG. 4A

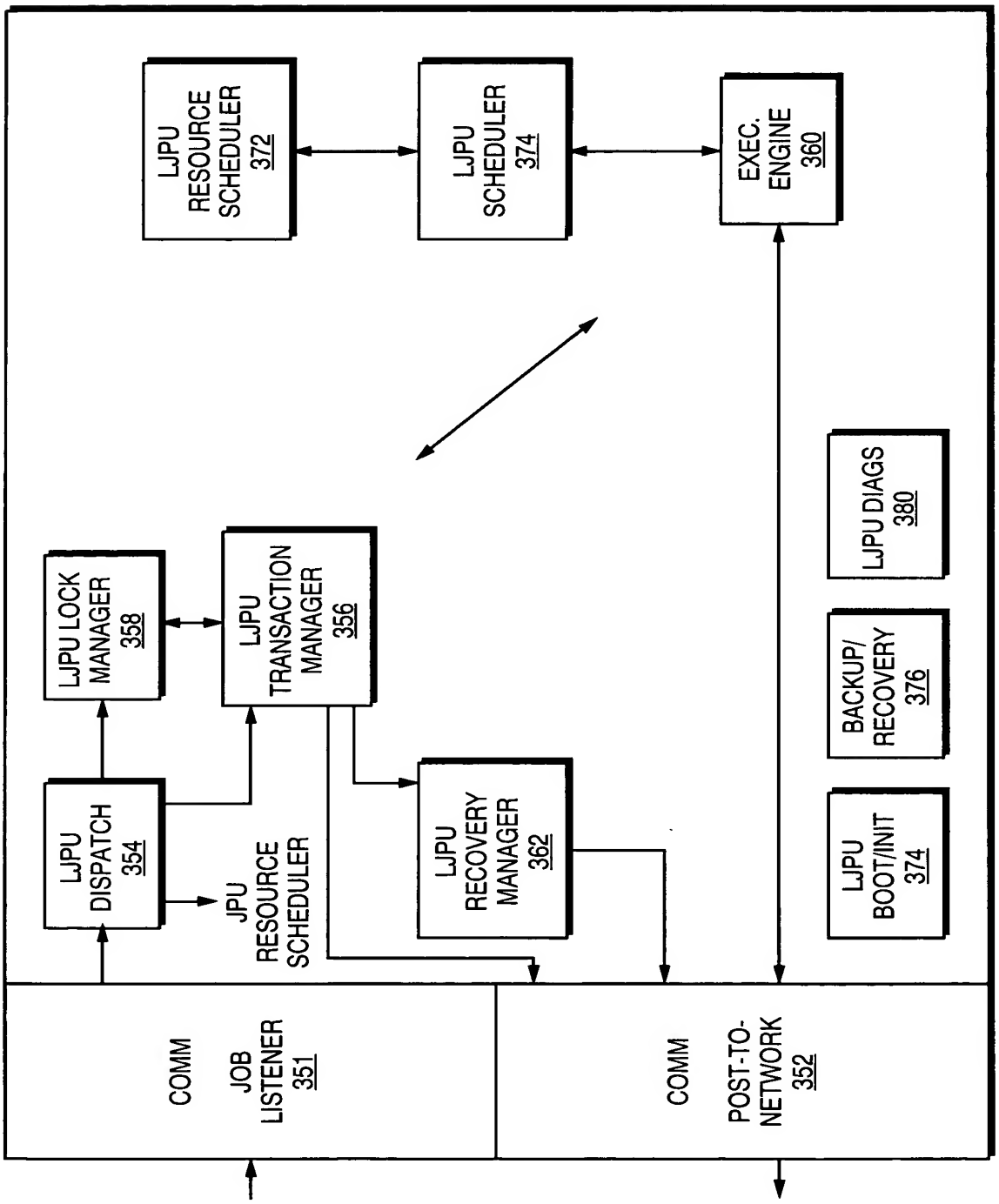

350
LJPU RESOURCE SCHEDULER 372
LJPU SCHEDULER 374
EXEC. ENGINE 360
LJPU DIAGS 380
LJPU LOCK MANAGER 358
LJPU TRANSACTION MANAGER 356
BACKUP/ RECOVERY 376
LJPU DISPATCH 354
JPU RESOURCE SCHEDULER
LJPU RECOVERY MANAGER 362
LJPU BOOT/INIT 374
COMM JOB LISTENER 351
COMM POST-TO-NETWORK 352

FIG. 4B

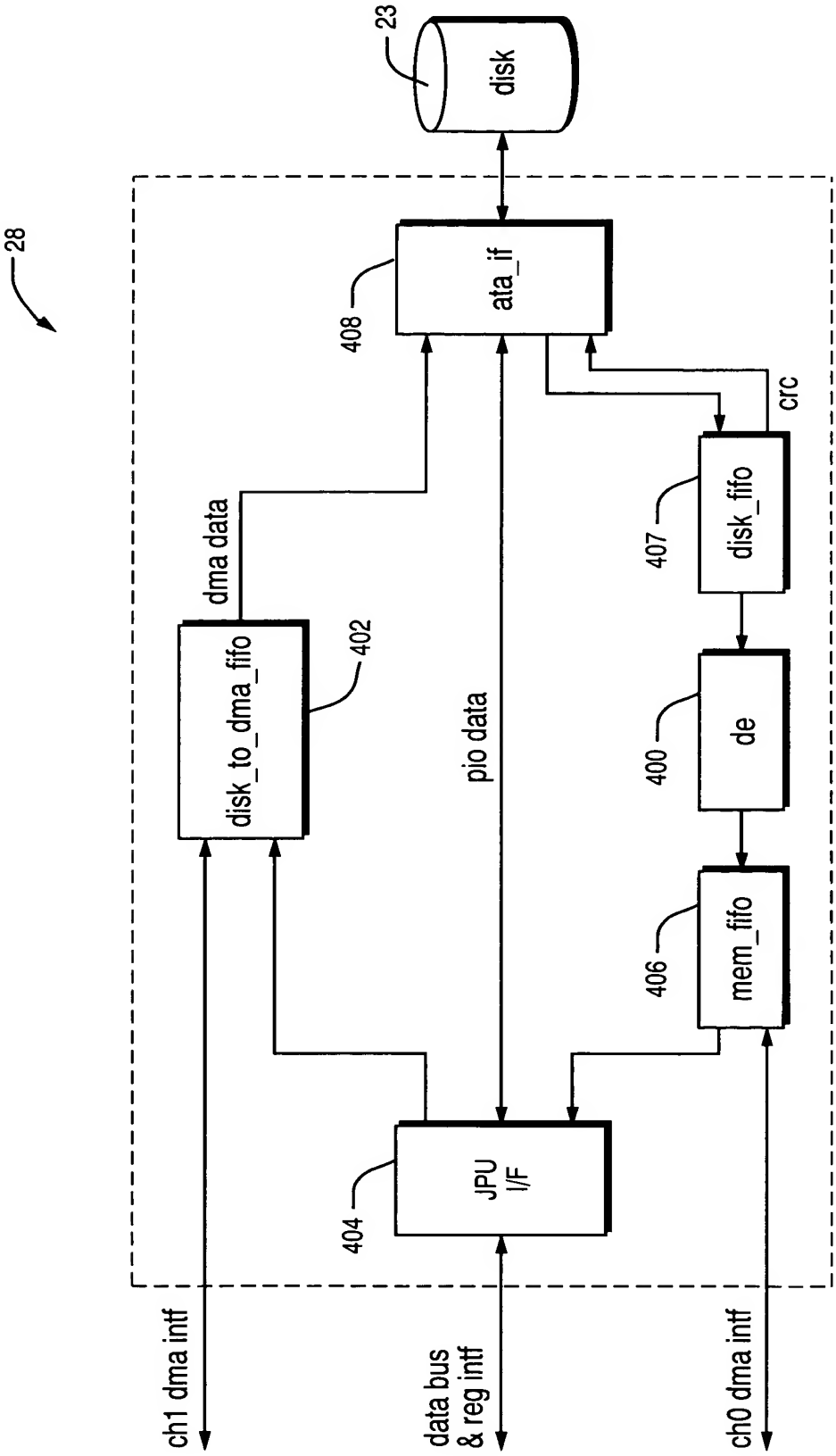

28
23
disk
ata_if
408
crc
disk_fifo
407
dma data
disk_to_dma_fifo
402
pio data
de
400
mem_fifo
406
JPU
I/F
404
ch1 dma intf
data bus
& reg intf
ch0 dma intf

FIG. 5

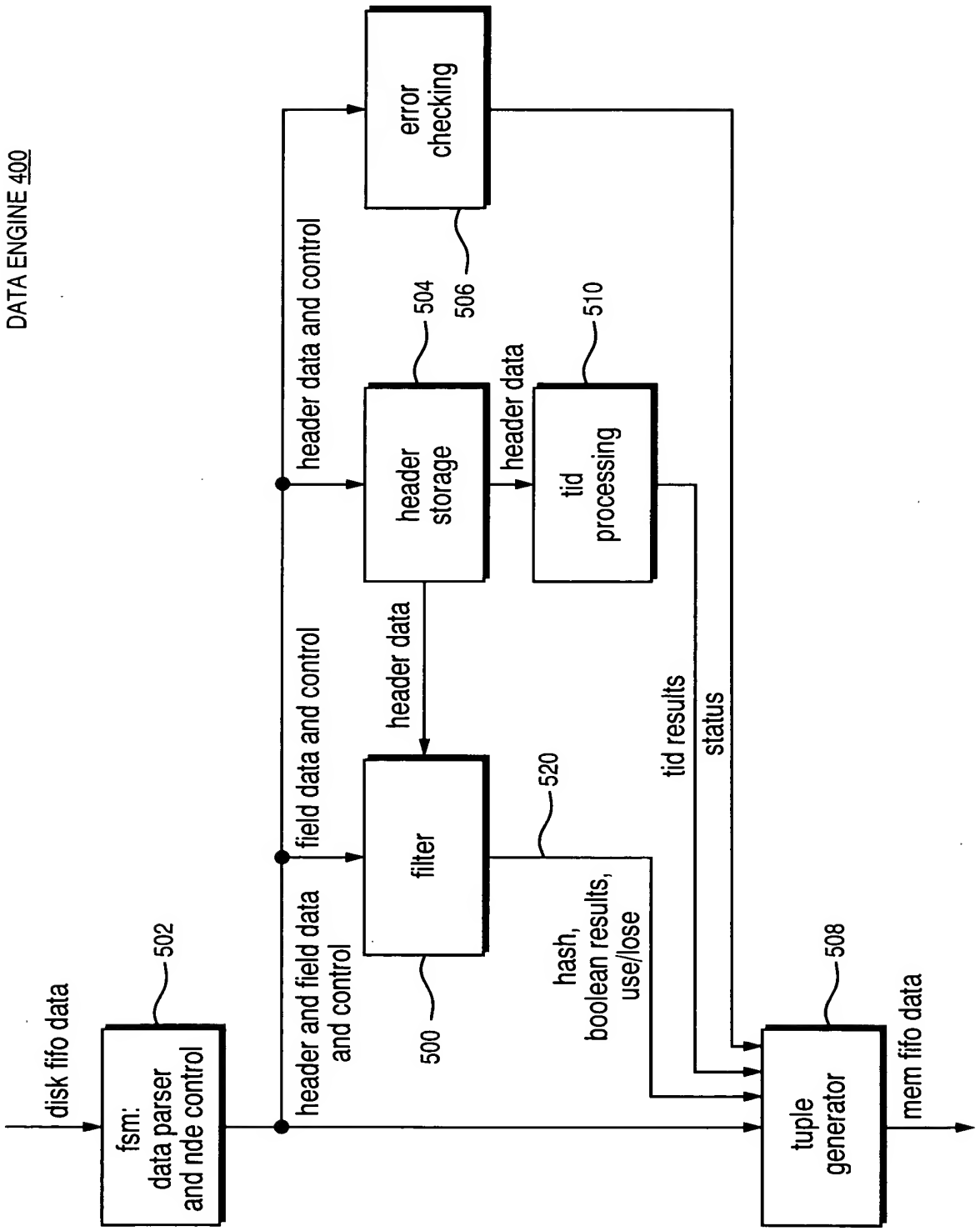

DATA ENGINE 400
disk fifo data
fsm: data parser and nde control
502
header and field data and control
header data and control
field data and control
error checking
506
504
header storage
header data
510
tid processing
header data
filter
500
520
hash, boolean results, use/lose
tid results
status
tuple generator
508
mem fifo data

FIG. 6

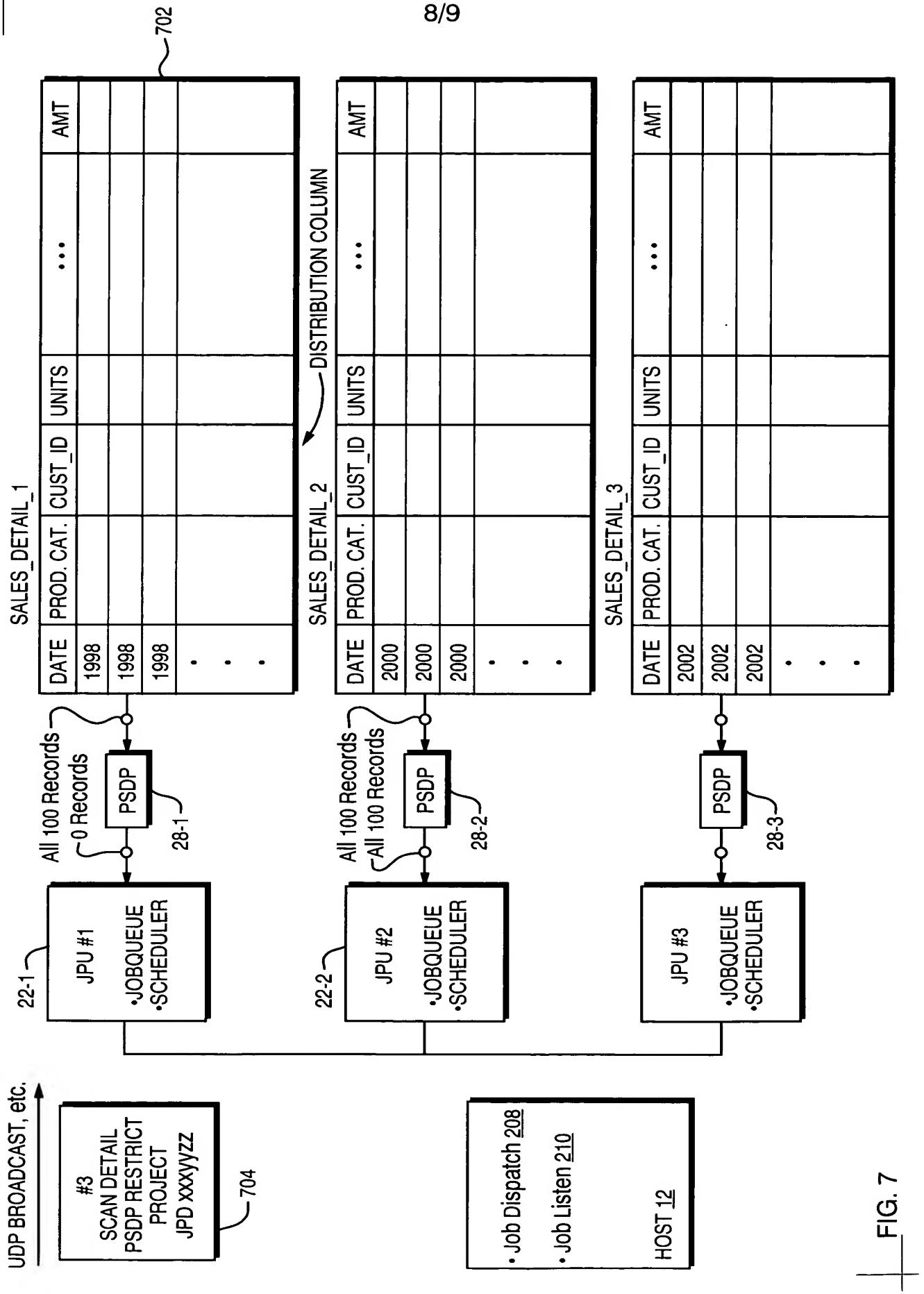
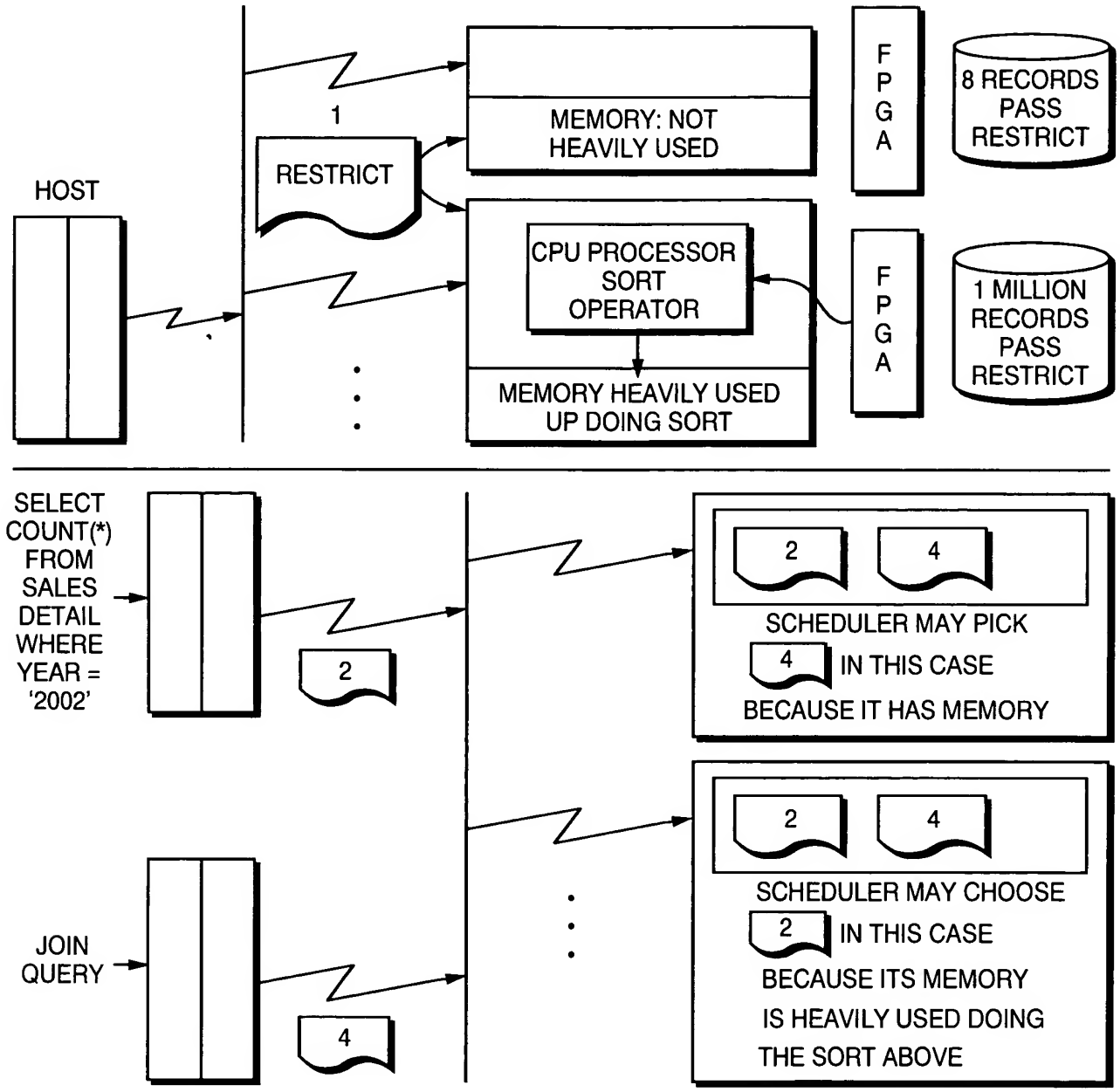

702
SALES_DETAIL_1
SALES_DETAIL_2
SALES_DETAIL_3
DISTRIBUTION COLUMN
DATE
PROD. CAT.
CUST_ID
UNITS
...
AMT
1998
2000
2002
All 100 Records
0 Records
PSDP
28-1
28-2
28-3
JPU #1
JPU #2
JPU #3
•JOBQUEUE
•SCHEDULER
22-1
22-2
UDP BROADCAST, etc.
#3
SCAN DETAIL
PSDP RESTRICT
PROJECT
JPD xxxyyzz
704
• Job Dispatch 208
• Job Listen 210
HOST 12

FIG. 7



1 → JOB 1: THE PREDICATE "YEAR = 2000" CAN BE PROCESSED WITHIN THE FPGA. DOING THE COUNT DOES NOT REQUIRE CONTINUING PRESENCE OF EACH RECORD. SO IT DOES NOT USE MUCH MEMORY (EACH RECORD THAT PASSES THE FPGA FILTER CAN BE DISCARDED ONCE IT IS COUNTED).

4 → JOB 4: (OR 5 OR 6) IS POTENTIALLY MEMORY INTENSIVE AS IT IS JOINING 2 STREAMS, ONE OF WHICH MUST BE MEMORY RESIDENT.

FIG. 8